

Radiotherapy

Radiotherapy uses high-energy rays to destroy cancer cells. It can be used to treat cancerous tumours and some benign (not cancer) or very slow-growing tumours. You will only have radiotherapy to the part of your body that needs to be treated.

First, you will meet a doctor who specialises in radiotherapy, called a clinical oncologist. They will talk to you about your treatment and the possible side effects.

You will have radiotherapy at a cancer treatment centre. If you do not live near a main cancer treatment centre, you might need to travel for your treatment. There will be a separate area in the cancer treatment centre where you will be given radiotherapy.

Staff called radiographers give you the treatment. They will explain exactly what is involved and how any side effects can be managed. You will get lots of support. Tell the radiotherapy team if there is anything that is worrying you about the treatment.

Radiotherapy can be used to cure a cancer. This is called radical radiotherapy. You will usually have it over several weeks. Radiotherapy is sometimes given in combination with surgery or chemotherapy.

Sometimes radiotherapy is used to relieve symptoms such as pain. In this situation you usually only need one session or a short course of treatment.

How is radiotherapy given?

Radiotherapy can be given from outside or inside the body.

- **External radiotherapy** is given from outside the body – this is the most common way radiotherapy is given.
- **Internal radiotherapy** is given from inside the body. The doctor may place a tube containing a radioactive substance in the area of the cancer. Or they may give you a drink or capsule of radioactive iodine to treat some thyroid cancers.

Most people have radiotherapy as an outpatient. But sometimes you might be in hospital while you have it. This could be because you are having other treatments as well and need looking after.

You usually have radiotherapy as short treatment sessions. You will probably have a treatment session every day from Monday to Friday. You will then have a break at the weekend.

Your specialist doctor will tell you how many weeks your radiotherapy will last. This is known as your course of radiotherapy. It may last for several weeks.

Some types of specialised radiotherapy are given in different ways.

Radiotherapy from outside the body does not make you radioactive. You do not need to worry that you will harm anyone during your treatment.

Planning your radiotherapy treatment

Your specialist doctor plans your radiotherapy carefully. This is to make sure the treatment works well and causes as little damage as possible to normal cells nearby. You might have to go to the radiotherapy department a few times to plan your treatment.

You will have a planning CT scan of the area to be treated. This helps your doctor plan:

- the exact dose of radiotherapy to give you
- the position of the radiotherapy beams.

During the scan, you lie still in the same position that you will be in for your radiotherapy. Planning can take a little while, but it is an important part of your treatment.

Skin markings

You might have some small, permanent marks (tattoos) made on your skin. They are about the size of a pinpoint. They help the radiographer make sure you are in the right position for each session of radiotherapy. They will only make these marks with your permission. If you are worried about having them done, tell your radiographer.

Radiotherapy masks

If you are having radiotherapy to your head or neck, you will have a mask made before the planning CT scan. The mask keeps your head and neck in exactly the right position during your radiotherapy. You only need to wear it during radiotherapy planning and your sessions of radiotherapy.

The mask is made of mesh plastic or a clear plastic (perspex). The mesh is warmed and put on to your face so that the plastic gently moulds to fit the shape of your head and neck. When it has moulded, the mask will feel hard. It usually takes about 30 minutes to make the mask, and it won't hurt.

You can breathe normally while the mask is on, and it shouldn't feel uncomfortable. You might feel claustrophobic as it is on your face, but the radiotherapy team will talk to you about ways of coping with this.

Having radiotherapy

Your radiographer will explain what will happen during treatment. At the beginning of each session, they will make sure you are in the correct position. You will need to lie still under the radiotherapy machine. Radiotherapy machines look like large x-ray machines.

When everything is ready, your radiographer will leave the room. This is when you will have the radiotherapy. It only takes a few minutes. You can talk to the radiographer through an intercom or signal to them during the treatment. You can usually bring music to play if you want.

Radiotherapy treatment is not painful. You will not see or feel it.

During treatment, the radiotherapy machine may stop and move into a new position. This is so you can have radiotherapy from different directions. The machine does not normally touch you.

Specialised types of external radiotherapy

Sometimes specialised types of external radiotherapy are used:

Stereotactic radiotherapy

Stereotactic radiotherapy (SRT) can be used to treat certain brain tumours. SRT uses many small beams of radiation that target the tumour. The beams cross over at the tumour. This means that the tumour gets a high dose of radiation and nearby areas only get low doses. This helps to reduce the side effects of treatment.

SRT is sometimes called Gamma Knife™ or CyberKnife™ because of the names of the different machines used to give this type of treatment.

You might only need one session of treatment. Or it might be given over several sessions of treatment. A session can take from about 15 minutes to a few hours, depending on the type of machine. Your radiotherapy team will tell you what to expect.

You may need a mask or a head frame made to help keep you in position during treatment. Your radiotherapy team will talk to you about this and give you lots of support.

Total body irradiation

Total body irradiation (TBI) is radiotherapy to the whole body. You may have TBI if you need a donor stem cell (allogeneic) transplant. It can be given as part of the treatment to get you ready to receive the donor's cells.

You may have TBI twice a day over several days, or as one or two sessions. You have it to the front and back of your body. Your radiotherapy team will explain everything and help you to change position when you need to.

Proton therapy

Proton therapy uses protons rather than x-rays to treat a tumour. But it is given in a very similar way to standard radiotherapy. Treatment with proton therapy may cause less damage to surrounding healthy tissue and reduce the side effects of treatment.

At the moment, some people with certain tumours travel abroad for proton therapy. This is paid for by the NHS. New proton therapy centres are being built in the UK. One of these opens this year (2018). They will provide proton therapy to treat certain tumours. Your specialist doctor will give you more information if they think proton therapy might be helpful for you.

Side effects

What are the side effects?

Radiotherapy damages cancer cells but can also affect normal cells close by. This is what causes any side effects that you get.

You usually get side effects in the part of your body that is being treated. You may also have some general side effects, such as feeling tired. Side effects usually build

up during treatment. After treatment finishes, it can take a week or two before side effects start getting better. Most of them usually go away gradually after that.

Sometimes, side effects take longer to improve. Or sometimes new side effects develop months or years after radiotherapy. These are called late effects. Your specialist doctor and nurse will explain the risk of any late effects.

We have listed some possible side effects of radiotherapy below.

Always tell your radiotherapy team about any side effects that you have or if they get worse. Your team can usually do something to improve the side effects, or they can give you more advice.

Before treatment starts

Your doctor, nurse or radiographer will tell you what to expect. They will give you advice on what you can do to manage side effects.

They will also give you advice on preparing for treatment. For example, if you are having radiotherapy to the head and neck, you may need to have a dental check before treatment starts.

Your doctor will explain if treatment might affect being able to get pregnant or make someone pregnant (your fertility). Before treatment starts you can see a specialist about possible ways of preserving your fertility.

Radiotherapy is harmful to an unborn baby, so it is important to prevent you or a partner getting pregnant. If you are having sex during treatment, your doctor or nurse will advise you to use contraception. They can advise you on how long you should continue to use contraception for.

If you smoke, it is important to try to stop. Stopping smoking can make radiotherapy work better. It also reduces the side effects of treatment. It can be difficult to stop, but there's lots of support to help you. Your doctor or nurse will give you advice. There are also NHS services to help people stop smoking.

General side effects of radiotherapy

Tiredness

This is a common side effect and probably the main one you will notice. You usually get more tired as treatment goes on. Having other treatments (such as surgery or chemotherapy) or travelling to the hospital every day can also make you feel more tired (fatigued).

It can help to:

- try not to do too much
- get plenty of rest
- do some gentle exercise, such as short walks – this will help give you more energy.

After treatment finishes, you may continue to feel tired for a few weeks or months. If it does not get better, let your doctor or nurse know.

If you feel up to it, there is no reason you can't still go out with your friends. It may help to tell them you might have to cancel plans at short notice if you are too tired. You can also keep up with friends through social media or texts so you still feel involved.

If you are studying, you will probably need some time off from school or university during your treatment. But you may be able to have some home schooling. Try not to worry about catching up. Schools and universities are used to helping students who have been unwell. They can set up any extra help you might need.

Skin changes in the treated area

In the area of your body that is being treated, the skin may feel dry and itchy after a few days. Depending on the colour of your skin, it may redden or become darker.

Your radiographer or nurse will give you advice on how to look after your skin. If it becomes sore, flaky, or broken in areas, tell them straight away. If you do get a skin reaction, it should get better within four weeks of treatment finishing.

Here are some skin care tips:

- Try to wear loose cotton clothing in the area that is treated. It will be less likely to irritate your skin.
- Wash your skin gently with mild soap (or aqueous cream) and water. Rinse the soap or cream off and pat your skin dry.
- Use unperfumed moisturiser on your skin every day. You can ask your radiographer about this.
- If your underarm is in the area that's being treated use your normal deodorant, unless the skin is broken.
- Try not to shave the area being treated. If you feel you have to shave, use an electric shaver.
- Do not expose the area to sunshine. Protect your skin from strong sunlight for at least a year after treatment finishes. Use sun cream with a high sun protection factor (SPF) of at least 30.

Eating difficulties

Sometimes, you may not want to eat. Radiotherapy may cause side effects that make eating difficult. For example, radiotherapy close to the tummy or pelvis can make you feel sick. Radiotherapy to the head and neck area may make it difficult to swallow certain foods. Always tell your radiotherapy team if you have any eating difficulties or worries about your weight.

Having small regular snacks throughout the day rather than three main meals is often easier. A dietitian can give you advice on foods or supplements you can add to your diet. Your doctor can prescribe medicines to control sickness or to help if you cannot swallow because of pain.

Side effects of radiotherapy to your tummy or pelvis

Radiotherapy given close to your tummy or pelvis (the area between your hips) may cause different side effects.

Feeling sick

You may feel sick. Your doctor will prescribe anti-sickness drugs for you. These usually control any sickness you have. Tell your nurse or doctor if they do not, as there are different ones they can try. Any sickness goes away when your radiotherapy finishes.

Diarrhoea

Radiotherapy to your pelvis may cause tummy cramps and diarrhoea. Your doctor will prescribe anti-diarrhoea tablets to take regularly until it settles down. It is important to drink plenty of fluids when you have diarrhoea. Your radiographer or nurse will give you advice on any foods you may need to avoid until the diarrhoea stops.

Bladder irritation

Radiotherapy to the pelvis can make you feel uncomfortable or sore when you wee (pass urine). It can also make you feel like you need to wee more often than usual. Let your doctor or nurse know if this happens or if your symptoms get worse. Your doctor can prescribe drugs to ease these symptoms and check for any urine infection.

Try to drink 2 to 3 litres of fluids each day. Concentrated urine can irritate the bladder and make your symptoms worse, and drinking more fluids reduces this. Avoid drinks that can irritate the bladder. These include drinks with caffeine in them (tea, coffee, hot chocolate, cola), alcohol, fizzy drinks, acidic drinks (orange and grapefruit juice) and drinks with artificial sweeteners (diet or light drinks).

Hair loss

Radiotherapy to the pelvis will cause you to lose your pubic hair. It will usually grow back a few months after radiotherapy finishes.

Side effects of radiotherapy to your chest

You might find it difficult to swallow, have a cough or feel breathless. Eating soft foods will make it easier to swallow. The radiotherapy team will give you advice on the kind of foods to eat. Your doctor can prescribe painkillers to make it more comfortable. If you have a cough or feel breathless, always let your doctor or nurse know.

Side effects of radiotherapy to your head and neck

Your mouth and throat may become sore and you may have difficulty swallowing. Try to follow the advice from your radiographer or nurse about taking care of your mouth and keeping it clean. Your doctor can prescribe liquid painkillers. Your radiotherapy team will give you advice on foods to eat that make swallowing easier. Once your course of radiotherapy has finished, your mouth will gradually heal. Most people get back to eating normally after a few weeks.

Radiotherapy to the head and neck may stop you making enough saliva. This means your mouth gets dry. Taking regular small sips of water can help. Your doctor can

prescribe mouthwashes, lozenges, artificial saliva sprays or gels to help. Saliva washes your teeth and protects them from decay.

Side effects of radiotherapy to the brain

Radiotherapy to the brain can cause different side effects. Common side effects include tiredness, itchy sore skin on your scalp, hair loss and headaches. Tell your doctor if you have headaches or feel sick. They can prescribe painkillers, steroids, or anti-sickness drugs to help. The side effects will usually improve gradually after treatment is over.

Hair loss

You will lose the hair in the treated area. You may also lose some hair on the opposite side of your head where the rays come out. The radiotherapy staff will show you where your hair is likely to fall out. They will give you advice on looking after the skin on your scalp. Your hair usually grows back within 2 to 3 months of finishing treatment. Sometimes, it grows back a slightly different colour or texture than before.

Depending on the dose of radiotherapy, the hair might grow back thinner. Or sometimes there may be patches where the hair doesn't grow back at all.

Tiredness

Tiredness is a common side effect. Try to balance getting plenty of rest with doing some gentle activity, like short walks. This can help give you more energy. Tiredness can sometimes take months to improve.

Some weeks after treatment, you may feel extremely tired, as if you want to sleep all the time (called somnolence). Tell your doctor or nurse if you feel like this.

Sometimes side effects get worse after treatment but this is temporary. Let your doctor know if this happens. It usually gets better by itself over the following weeks.

Late effects of radiotherapy

Radiotherapy can help to cure cancer. But it can sometimes cause side effects months or years later. These are called late effects or long-term side effects. Newer ways of giving radiotherapy help to reduce the chances of developing late effects.

Late effects depend on where the treated area is and the dose of radiotherapy you had. Your specialist doctor or nurse will talk to you about any risk of late effects. After radiotherapy, you will have regular check-ups, usually for years. So, any problems linked to your treatment can usually be picked up and managed or treated early.

A possible late effect of radiotherapy to the pelvis, or sometimes to the brain, is that it might affect your fertility. Fertility means being able to get pregnant or make someone pregnant. Your specialist doctor and nurse will talk to you about this. You can ask about possible ways of preserving your fertility before treatment starts.

Another important late effect is the risk of getting another cancer in the treated area. The thought of this can be scary. But it is important to remember that this is rare. It can help to talk this over with your doctor or nurse. They will advise you to have any new symptoms or lumps checked by your specialist team or GP.

Your specialist doctor or nurse can explain what you can do to help reduce the risk of certain late effects. This usually includes making healthy lifestyle choices such as not smoking, protecting your skin from the sun, keeping physically active and eating healthily.

This can be a lot of information to take in at the start of your treatment. You can ask more questions when you go back for check-ups.